UNITED STATES DISTRICT COURT
DISTRICT OF MASSACHUSETTS

Shinya Imamura, Iryo Hojin Nishikai, Iryo Hojin Shadan Imamura Clinic, Kabushiki Kaisha Bellevue Trading, Kabushiki Kaisha Maruhi, Koeki Zaidan Hojin Jinsenkai, Konno Geka Clinic, Akira Konno, and Masahiro Yamaguchi, on behalf of themselves and all others similarly situated, Plaintiffs, v. General Electric Company, and Does 1 – 100, inclusive Defendants.	**Civil Action No.** **Class Action**

CLASS ACTION COMPLAINT AND DEMAND FOR JURY TRIAL

Plaintiffs Shinya Imamura, Iryo Hojin Nishikai, Iryo Hojin Shadan Imamura Clinic, Kabushiki Kaisha Bellevue Trading, Kabushiki Kaisha Maruhi, Koeki Zaidan Hojin Jinsenkai, Konno Geka Clinic, Akira Konno, and Masahiro Yamaguchi (collectively, "Plaintiffs"), on behalf of themselves and all others similarly situated, hereby allege as follows:

SUMMARY OF ACTION

1. This is a class action case to recover property and other economic damages caused by the Fukushima Nuclear Disaster in Japan, the largest nuclear disaster in world history. Plaintiffs are property owners, businesses and other commercial enterprises that have been economically devastated and literally ruined by the matters alleged in this complaint. Plaintiffs bring this class action on behalf of themselves and all others similarly situated against General

Electric Company ("GE"). Defendant GE is a New York corporation headquartered in Boston, Massachusetts and a leading player in the global nuclear power industry. GE designed and largely constructed the entire failed Fukushima Daiichi Nuclear Power Plant (the "FNPP") at the center of this dispute, and for many years, directly or indirectly through its affiliates, was responsible for maintenance of the FNPP. To this day, GE has paid literally nothing toward the massive economic and business destruction its actions and failings have caused. Plaintiffs intend to change that.

INTRODUCTION

2. While unknown to Plaintiffs during the relevant time period, the FNPP was actually built and constructed by GE immediately beside the shores of the Pacific Ocean on the eastern coast of Japan, in Fukushima Prefecture, approximately 220 miles northeast of Tokyo, the world's largest metropolitan area. At the time of the Fukushima Nuclear Disaster on March 11, 2011, the FNPP utilized six boiling water nuclear reactors ("BWRs") all designed and largely constructed by GE. While GE exclusively constructed reactors 1, 2 and 6 ("Unit 1, Unit 2, and Unit 6"), it also participated in and/or oversaw the construction of reactors 3, 4 and 5 ("Unit 3, Unit 4, and Unit 5"). All reactors at the FNPP utilized GE's wholly inadequate Mark I BWR design, except Unit 6, which utilized a Mark II BWR design, also created and designed by GE. Plaintiffs are informed and believe that GE essentially oversaw and managed the entire design and development of the FNPP project and participated regularly in maintenance of the facility over many years, even having a large number of its employees and/or contractors present and on site to perform maintenance activities at the time of the Fukushima Nuclear Disaster on March 11, 2011.

3. The region of Japan where the FNPP was located and constructed by GE and others has a long-recorded history of very large earthquakes and tsunamis dating back well before the FNPP was designed and constructed. Despite this well-known and well-documented historical evidence, of which GE was fully aware, GE intentionally selected and used a plant and reactor design at the FNPP that utterly failed to protect against these known and well-established

natural risks and that would not and could not provide reasonable protection against nuclear reactor meltdowns and ensuing disasters. Among other things, in an amazing act of utter neglect, during construction of the FNPP, GE and its partners actually lowered the natural protective cliff at the FNPP site by more than 60 feet as a short-sighted cost-saving measure, thereby placing the entire FNPP and all six GE-designed BWRs unsafely close to the adjacent Pacific Ocean and well within known tsunami striking range. Plaintiffs are informed and believe that but for GE's decision to lower the protective cliff at the FNPP site by more than 60 feet, the injuries prayed for herein would never have occurred.

4. Over the several days following the earthquake and tsunami that directly impacted the region around the FNPP, the GE-designed BWRs at Units 1, 2 and 3 experienced entirely foreseeable flooding and resulting nuclear meltdowns followed by three large hydrogen explosions at Units 1, 3 and 4, causing a massive release of radioactive matter out of the wholly inadequate GE-designed reactor containment vessels and into the surrounding environment, making much of the region literally uninhabitable and causing massive economic damage and ruin to the Plaintiff class members that continues to this day.

5. Nuclear power plants should be designed, built and maintained with the expectation that they will never explode. Yet the GE-designed Mark I reactors did exactly that, experiencing nuclear meltdowns and hydrogen explosions, their weak and inadequate containment structures utterly failing to do their job and prevent massive releases of radioactive matter into the environment from Units 1, 3 and 4.

6. The meltdowns, hydrogen explosions and release of radioactive materials at the FNPP are a direct and foreseeable result of GE's utterly defective design of the Mark I containment vessels and the design, construction and placement of the FNPP, inaccurate assumptions regarding risk, and the failure of safety systems.

7. To this day Units 1, 2, and 3 remain fully contaminated due to GE's failed design of the containment vessels for each of these three reactors, which caused them to overheat and explode, releasing vast amounts of nuclear material into the environment. In fact, a former

Regional Administrator of the United States Nuclear Regulatory Commission observed that the Mark I's are the worst containment in the world.

8. GE's negligence, inclusive of the negligence of its subsidiaries, agents, servants, and/or employees, and defective design of the FNPP itself and the various emergency safety products that were supposed to safeguard nuclear matter from being released, also contributed mightily to the disaster and to Plaintiffs' damages. These include at least the following:

(a) GE and its subsidiaries, agents, servants and/or employees negligently established the design for tsunami and earthquake protection (given the long history of massive earthquakes and tsunamis in the region), and failed to implement any remediation for that negligent design during the life of the FNPP;

(b) GE its subsidiaries, agents, servants and/or employees failed to adequately warn its customers, Japanese residents, and other interested and related parties of the risks associated with operating the GE reactor in relation to tsunami and earthquake protection issues (given the long history of massive earthquakes and tsunamis in the region).

(c) GE and its subsidiaries, agents, servants and/or employees negligently placed emergency backup diesel generators (which protect the nuclear plant during power outages) in low basement locations of buildings near the Pacific Ocean that were not water resistant to secure against flooding and as a result flooded easily, and with no backup power available to keep the reactors cool and prevent a meltdown and explosion when outside power was lost, and failed to remediate that error during the life of the FNPP;

(d) GE and its subsidiaries, agents, servants and/or employees improperly placed seawater pumps (which are necessary to maintain reactor cooling during emergencies to prevent explosions) so that they were susceptible to flooding and failed to operate, and failed to remediate that error during the life of the FNPP;

(e) GE and its subsidiaries, agents, servants and/or employees defectively designed cooling mechanisms (redundancies necessary to ensure reactor cooling during an emergency to prevent explosions) and failed to remediate that error during the life of the FNPP.

(f) GE and its subsidiaries, agents, servants and/or employees defectively designed circulation pipes critical to the cooling system of the reactor,

and failed to remediate that error during the life of the FNPP, resulting in a catastrophic "Loss of Coolant Accident" during the Fukushima Nuclear Disaster, due to the breaking, splitting apart and cracking of such pipes.

(g) GE and its subsidiaries, agents, servants and/or employees defectively designed the reactor buildings, designing and building them too small to accommodate sufficient emergency equipment, with the result that backup equipment, such as power trucks, generators and batteries, were unavailable at the time of the Fukushima Nuclear Disaster, and failed to remediate that error during the life of the FNPP.

(h) GE and its subsidiaries, agents, servants and/or employees defectively designed the reactor control room by failing to install backup batteries to provide power during emergencies, and failed to remediate that error during the life of the FNPP.

(i) GE and its subsidiaries, agents, servants and/or employees defectively designed the FNPP by failing to design an emergency cooling system that would allow fresh water to be pumped directly into the reactors, and failed to remediate that error during the life of the FNPP.

(j) GE and its subsidiaries, agents, servants and/or employees defectively designed the Mark I BWR reactor by providing for control rods to enter the reactor vessel through holes in the floor, thus facilitating a meltdown through the bottom of the reactor vessel, which is what happened during the Fukushima Nuclear Disaster, and failed to remediate that error during the life of the FNPP.

(k) GE and its subsidiaries, agents, servants and/or employees defectively designed the FNPP by placing spent fuel pools at the top of the reactor buildings, more than 100 feet in the air, making them susceptible to losing coolant water in the event of an earthquake and potentially exposing the spent fuel, risking an explosion, and failed to remediate that error during the life of the FNPP.

(l) GE and its subsidiaries, agents, servants and/or employees defectively designed the FNPP by designing steam release valves that failed to open during the Fukushima Nuclear Disaster, thus contributing to the explosions and release of nuclear materials, and failed to remediate that error during the life of the FNPP.

9. The seeds of the Fukushima Nuclear Disaster were planted in the 1960s when GE made a risky bet to dominate the commercial nuclear power industry. In so doing, GE misrepresented the safety of its defectively designed and manufactured Mark I BWR so it could

generate sales and earn profits from the excitement that existed at the time surrounding the possibilities of nuclear power.

10. Plaintiffs have paid a heavy price for GE's speculative bet, which has caused enormous and unprecedented economic and property damage to hundreds if not thousands of Plaintiff businesses, individual property owners, and other forms of corporate enterprises.

11. The Fukushima Nuclear Disaster released several radioactive isotopes, including cesium-134 (with a half-life of two years), cesium-137 (with a half-life of 30 years), strontium-90 (with a half-life of over 28 years), plutonium-239 (with a half-life of 24,000 years, and which is hazardous to humans for tens of thousands of years) and Iodine-131 (with a half-life of only eight days but which is easily absorbed by the thyroid and may cause thyroid disease or thyroid cancer in exposed individuals). Even to this day, radioactive water continues to leak into the environment.

12. Likely the most costly industrial accident in history, the Fukushima Nuclear Disaster caused the removal of approximately 150,000 people from the region near the FNPP, the wholesale abandonment of scores of businesses, as well as the abandonment of real and personal property, and the collapse of local governmental institutions, not to mention financial ruin for Tokyo Electric Power Company ("TEPCO") which operated the FNPP, and the need for a massive clean-up and safety effort the costs of which have been estimated to be in the range of over $200,000,000,000.

13. Plaintiffs seek monetary damages from GE for the economic harm and property damage they have incurred by virtue of the release of nuclear matter from the FNPP that would not have occurred but for GE's wrongful conduct in mis-designing, manufacturing, selling, and constructing its inherently and unreasonably dangerous nuclear reactor products and plant and in failing to take steps to correct these well-known defects and to warn Plaintiffs about these hazards since the time when the FNPP was constructed.

PARTIES

Plaintiffs

14. Plaintiff Shinya Imamura is a physician who was a resident of Minamisoma in Fukushima Prefecture, which is located within the mandatory evacuation zone established as a result of the Fukushima Nuclear Disaster, and who was forced to evacuate and suffered damages to his residence as a result of the Fukushima Nuclear Disaster.

15. Plaintiff Iryo Hojin Nishikai is a clinic for internal medicine, a non-profit entity located within the town of Namie in Fukushima Prefecture, Japan, within the mandatory evacuation zone established as a result of the Fukushima Nuclear Disaster, which suffered damage to its hospital and related employee housing as a result of the Fukushima Nuclear Disaster.

16. Plaintiff Iryo Hojin Shadan Imamura Clinic is a clinic for obstetrics and gynecology, a non-profit entity located in Namie Town in Fukushima Prefecture, within the mandatory evacuation zone established as a result of the Fukushima Nuclear Disaster, which suffered damage to a hospital as a result of the Fukushima Nuclear Disaster.

17. Plaintiff Kabushiki Kaisha Bellevue Trading is a stock corporation engaged in the business of operating a retail store and dining hall at the facilities of Koeki Hojin Jinsenkai located in the town of Date in Fukushima Prefecture, and which suffered economic damages (including reputational damage) due to depopulation of the region around the FNPP as a result of the Fukushima Nuclear Disaster.

18. Plaintiff Kabushiki Kaisha Maruhi is a stock corporation engaged in the businesses of manufacturing and distributing dried sweet potato products, and operation of a day spa, bath house and two tourist facilities for seaside visitors, all located in Hitachinaka City in Ibaraki Prefecture next to Fukushima Prefecture, and which suffered economic damages (including reduction in sales and reputational damage) due to depopulation of the area and significant reduction of tourism as a result of the Fukushima Nuclear Disaster.

19. Plaintiff Koeki Zaidan Hojin Jinsenkai is a non-profit entity that operates medical clinics, having its head office at Fukushima in Fukushima Prefecture, which suffered loss of income due to the evacuation of residents from the area around the FNPP. Koeki Zaidan Hojin Jinsenkai operates Kita-Fukushima Medical Center, Hobara Central Clinic, Saint Clinic, Yanagawa Hospital, Prime-Care Tokarin, Hobara Home Nursing Visit Station, Abukuma Home Nursing Visit Station, Hobara Designated Residence and Local Comprehensive Support Center.

20. Plaintiff Konno Geka Clinic is a non-profit surgical clinic located within the town of Minamisoma in Fukushima Prefecture, within the mandatory evacuation zone established as a result of the Fukushima Nuclear Disaster, which suffered damage to a hospital facility as a result of the Fukushima Nuclear Disaster.

21. Plaintiff Akira Konno is a surgeon from the town of Minamisoma in Fukushima Prefecture, within the mandatory evacuation zone established as a result of the Fukushima Nuclear Disaster, who suffered damages to his personal residence as a result of the Fukushima Nuclear Disaster.

22. Plaintiff Masahiro Yamaguchi was a resident of Minami Yanome in Fukushima Prefecture and a major shareholder of Yugen Kaisha Sesami, a limited liability company formerly engaged in the business of manufacturing wet suits in Minami Yanome, which was bankrupted due to the collapse of sales caused by reputational damage and reduction of tourism as a result of the evacuation necessitated by the Fukushima Nuclear Disaster.

Defendants

23. GE is incorporated under the laws of the State of New York and has its corporate headquarters and principal place of business at 41 Farnsworth Street, Boston, Massachusetts 02210. Based on its public filings, GE does business in more than 100 countries around the world and is ranked among the Fortune 500. GE is undoubtedly one of the world's largest and most profitable companies. Plaintiffs are informed and believe that GE utilized hundreds of

engineers, technicians and employees in the design and construction of the FNPP within the United States and that the company still has a team of employees and/or contractors dedicated to working on the FNPP site. During the life of the FNPP, GE benefited from lucrative contracts to provide maintenance and other services for the FNPP.

24. Plaintiffs do not know the true names and capacities, whether individual, corporate or otherwise of Does 1 – 200, and therefore sue the Doe Defendants by such fictitious names. The Doe Defendants and GE are hereinafter referred to as "Defendants." Plaintiffs will amend their complaint to allege the true names and capacities of these Defendants when this information has been obtained.

25. All of the acts and failures to act attributable to Defendants herein are likewise attributed to the subsidiaries, agents, servants and employees of the Defendants and under the direction and control of Defendants, acting or failing to act with the permission, consent and authorization of Defendants. Such acts and failures to act were within the scope of such relationship with the Defendants and the Defendants ratified, endorsed and agreed to such acts and failures to act of each of the other Defendants. Each of these acts and failures to act is alleged against each Defendant, whether acting individually, jointly or severally. At all times relevant to this action, each Defendant was acting within the course and scope of his, her or its employment, agreement and ratification.

JURISDICTION AND VENUE

26. Jurisdiction is proper in this district pursuant to 28 U.S.C. § 1332(a)(2) because the Plaintiffs are citizens of Japan and GE is a citizen of Massachusetts with its corporate headquarters in Boston. Jurisdiction is also proper in this district pursuant to 28 U.S.C. §

1332(d) for the further reason that the matter in controversy exceeds $5,000,000, exclusive of interest and costs, and Plaintiffs are citizens of Japan and GE is a citizen of Massachusetts.

27. Venue is proper in this district pursuant to 28 U.S.C. § 1391 because GE resides in this district and has its corporate headquarters and principal place of business within the judicial district. GE conducts substantial and continuing business in this district and, as such, the Court has personal jurisdiction over GE in this district.

FACTS COMMON TO ALL CAUSES OF ACTION

28. Plaintiffs allege the following facts, on information and belief:

GE and the Commercial Development of Nuclear Reactors

29. In 1954, the Atomic Energy Act was amended to permit private sector development of nuclear power and nuclear technology and the Atomic Energy Commission (predecessor to the Nuclear Regulatory Commission) endorsed this new energy technology. That same year, the U.S. Navy launched the USS Nautilus, the first nuclear-powered submarine.

30. At that time, GE was at the forefront of nuclear reactor development, but was struggling with the high cost for customers interested in the production of energy making use of nuclear fission.

31. The cost of building nuclear reactors was of such concern to GE that it developed design plans for a cheap reactor, small and with a significantly smaller, but less safe, containment than industry standard. This allowed GE to generate sales, become a major player in the market and make enormous profits at the expense of safety. Displaying GE's determination to develop that product, in 1961, its Chief Executive Officer proclaimed, "We're going to ram this nuclear thing through."

32. The uranium core at the center of a nuclear reactor needs a containment structure to prevent deadly radioactive material from reaching the environment. Rather than use a large building to contain radiation, GE's Mark I uses a small containment building. Unfortunately, GE's cheap design failed to prevent a meltdown and radioactive release at the FNPP in March 2011.

33. There was consensus among many experts, by at least the mid-1960s, that the BWR design advanced by GE, the simplest reactor design in production, was fatally defective and unsafe; in particular because its containment vessel was unlikely to prevent the release of nuclear matter in a meltdown.

34. GE exerted enormous political and economic pressure so that the world would embrace the design and construction of BWR nuclear plants, giving the public and regulators no opportunity to pause and consider the concerns of design skeptics, who warned that the BWR products could not be made safe.

35. GE was soon selling dozens of its defectively-designed BWRs to power companies in the United States, Japan and elsewhere. Included among them was the sale of the Mark I nuclear reactor and containment system in or around 1967 to TEPCO. GE designed the FNPP and then constructed several of the reactors there, including Units 1 and 3, and designed each of the three reactors that ultimately failed and melted down in March 2011.

How Boiling Water Reactors Operate

36. A BWR relies on nuclear fuel to heat water. The water boils and creates steam, which drives the turbines that create electricity. The steam is then cooled and condensed back to water, which returns to the reactor to be heated once again by the nuclear fuel.

37. The nuclear fuel consists of uranium dioxide pellets loaded into metal fuel rods and placed in a square array called a fuel bundle. Fuel bundles are inserted into the reactor, and are collectively known as the reactor "core". The core is housed within the reactor's pressure vessel made of seven-inch-thick steel.

38. Control rods govern the power level of the reactor core and are used to shut down the reactor. These cross-shaped control rods contain material that absorbs the neutrons emitted by splitting atoms. A control rod slips between four fuel bundles when inserted in the core. During a reactor emergency, control rods are fully inserted into the core within a few seconds to interrupt the nuclear chain reaction and shut down the core.

39. The steam system transports steam from the reactor pressure vessel to turbines via four pipes. The amount of steam produced is proportionate to the reactor core's power level. Thus, as the core power level increases, more steam is produced.

40. The steam enters the turbines and spins the turbines at a constant rate of 1,800 or 3,600 revolutions per minute to power a generator that generates electricity. The electricity produced by the generator flows to a transformer that increases the voltage level to that of the transmission system. Power lines radiate from the site to transport electricity to commercial and residential customers.

41. The steam pipes that connect to the turbines are equipped with two "isolation valves" that are expected to close in the event of an accident in order to minimize reactor coolant loss and the amount of radioactive matter that might escape to the environment through the steam pipes.

42. When the isolation valves close, there is a risk of pressure buildup in the steam pipes. In order to prevent the buildup of pressure in the steam pipes, safety relief valves are

supposed to open automatically. The safety relief valves discharge to a large body of water called a "suppression pool" that is an essential part of the BWR pressure-reduction design.

43. More than one million gallons of water in the suppression pool absorb the energy in steam flowing from open safety relief valves and remove heat released when large quantities of steam are released from the reactor or the reactor recirculation system. As a result, the increase in pressure and temperature inside the containment vessel is much lower than it would be without the suppression pool.

44. In order to remove heat, a residual heat removal system is supposed to take heat from the suppression pool via heat exchangers and, in the case of the FNPP, eject heat into the Pacific Ocean. This is done through the emergency service water system, pumps, which were placed by the edge of the Pacific Ocean. These pumps were overwhelmed during the tsunami that struck the FNPP. In addition, pipes associated with the cooling system fractured, cracked and broke during the Fukushima Nuclear Disaster.

Required Safety Features of Boiling Water Reactors

45. In theory, nuclear reactor safety systems are built into the design and construction of BWRs to help shut down the reactor, remove heat, maintain the shutdown condition of the reactor and prevent the release of radioactive material. The BWR system design includes emergency backup generators, as well as primary and secondary containment structures.

46. Reactor designers, such as GE, must incorporate mechanical malfunction and human error into their design basis safety considerations. Redundant emergency cooling systems are a central feature of those design basis considerations, each meant to operate independently in the event of a reactor accident.

47. One of the important safety systems is the High-Pressure Coolant Injection (or "HPCI") system. This is necessary because if fuel temperature exceeds 2,000 degrees, explosive hydrogen gas is generated. This occurred in connection with the Fukushima Nuclear Disaster.

48. This first line of defense for a reactor consists of a set of pumps meant to inject coolant into the reactor vessel. This system failed during the Fukushima Nuclear Disaster as a result of various design defects.

49. The Reactor Core Isolation Cooling (or "RCIC") system is another important safety system. This system is designed to provide water to cool the reactor. This is typically done with steam-turbine-driven cooling pumps that are meant to function without battery, generator, or off-site electrical power. In other words, the system is supposed to be a defense against a power blackout at a nuclear reactor plant. This critical system failed during the Fukushima Nuclear Disaster.

50. The large uranium core powering the generators at Mark I-design BWR nuclear plants like the FNPP required a massive safety apparatus to ensure that the flow of water to cool the reactor would not be interrupted. If it were, the core of a GE nuclear reactor could burn right through the containment shell and release nuclear material into the environment. In fact, this is what happened during the March 2011 meltdown because the core melted and flowed downward out of the reactor and through the containment, where it remains to this day.

51. In 1964, the Atomic Energy Commission studied potential meltdown scenarios for BWRs such as the Mark I and concluded:

> We have found in our present study nothing inherent in reactors, or in safeguard systems as they have now been developed which guarantees either that major reactor accidents will not occur or that protective safeguard systems will not fail. Should such accidents occur very large damages would result.

52. The next year, the Atomic Energy Commission's Advisory Committee on Reactor Safeguards pressured GE to make its BWR design safer. In August 1966, the Committee reported to Dr. Glenn Seaborg, Chairman of the Atomic Energy Commission until 1971, that it could only support construction of a then-pending nuclear reactor if future reactors would be designed with a more robust, safer containment mechanism. Dr. Seaborg, a strong proponent of commercial reactor development, attempted to keep this information from reaching the public.

53. Then Chair of the Atomic Energy Commission's Committee, Dr. David Okrent, later commented that GE held nuclear power hostage by making it plain in those 1966 meetings that it would not remain in the business of building nuclear reactors if it were forced to redesign its nuclear reactors to better account for core meltdown scenarios. Thus, GE was permitted to continue development of its defective reactors.

54. In a November 17, 1971, memo authored by nuclear expert Stephen Hanauer, chief nuclear safety regulator at the Atomic Energy Commission and later Chair of the Atomic Energy Commission Advisory Committee for Reactor Safeguards, concerns over the "GE Pressure Suppression Containments" were discussed, including GE's attempts to minimize safety concerns and keep discussion of these matters from the public. Among other things, the Hanauer memo concluded that the GE test results used to defend the safety of its pressure containment design were incorrect and relied on test data that was inapplicable to accident conditions.

55. Not only were the dangers of the Mark I containment product well known to regulators and other nuclear experts, they were also plain to GE. But GE never made any effort to revise the design or address the safety flaws of the Mark I reactors.

56. In 1974, Congress became concerned about industry influence over the Atomic Energy Commission. The Atomic Energy Commission was abolished, and the Nuclear Regulatory Commission was established to replace it.

57. In 1976, three GE nuclear engineers publicly resigned from GE "as a matter of conscience", citing concerns over the problems with the Mark I containment systems. These engineers, Dale Bridenbaugh (who cautioned that the Mark I design did not account for the realities of core meltdown in an event where the cooling mechanisms failed), Richard Hubbard and Gregory Minor, later testified before a U.S. Congressional committee about their concerns (concerns that were well known to GE).

58. Once the defective design of the Mark I containment product became more widely known, GE stopped selling the product and moved to different, larger containment designs. GE also began to install venting mechanisms on the containments as a preventative measure to avoid pressure increase, and potential breach of containment, in the event of an accident. This meant that the likelihood of radioactive matter leaving the nuclear reactor was increased.

59. Long before the nuclear disaster unfolded in Japan in March 2011, GE, as well as the Nuclear Regulatory Commission and the community of nuclear experts in the U.S. and elsewhere, were aware that the defects in the Mark I containment design meant that the probability of nuclear containment failure of the Mark I in a meltdown approached 90% and that backup systems to prevent meltdown would not function to do so. In fact, these exact same systems failed during the March 2011 disaster.

60. The FNPP is not the only nuclear facility designed or built by GE in Japan to experience a nuclear accident. In 1981 almost 300 workers were exposed to excessive levels of radiation after a fuel rod ruptured during repairs at the Tsuruga Nuclear Power Plant. In March

1997, a fire and explosion occurred at the Tokaimura nuclear reprocessing plant northeast of Tokyo and 37 workers were exposed to radiation. In September 1999, a critical accident occurred at the Tokai fuel fabrication facility, where hundreds of people were exposed to radiation and two workers later died.

GE Sells Defective Mark I Reactors to Japan and Constructs the FNPP

61. GE designed the FNPP.

62. The FNPP consists of six BWRs, Units 1-5, each of which is a Mark I structure, and Unit 6, with a Mark II structure.

63. GE designed all six reactors. It also constructed Unit 1 and delivered it to TEPCO as a fully complete turnkey project. GE then constructed Units 2 and 6, while providing expertise and the design basis (strictly followed) for Units 3 and 5 (built by Toshiba Corp.) and Unit 4 (built by Hitachi Ltd.).

64. The FNPP was designed to be constructed on a bluff originally 35-meters above sea level. GE's cost forecast for the plant called for lowering the height of the bluff by 25 meters. This action lowered the cost of operating the seawater pumps, since energy would not be needed to pump water up the 35-meter cliff height. Leveling the cliff also facilitated the delivery of heavy equipment to the construction site during the construction of the FNPP. However, building close to sea level also dramatically increased the flood risk.

65. In both Units 1 and 2, GE designed and placed the emergency diesel generators needed to continue reactor core cooling if there was power loss in the basement of the turbine building, without protection against flooding, notwithstanding the risk of tsunamis in that location. This GE design was followed in the remainder of the reactor Units and played a critical role in the eventual meltdown of the nuclear reactors.

66. GE's design and construction of the FNPP placed these essential backup systems, critical to maintaining the safety of reactors in a power loss, in turbine rooms that lacked adequate sealing to prevent flooding that would render them useless. The March 2011 tsunami flooded these generators, thereby disabling the only power back-up capable of helping prevent nuclear meltdown and radioactive release.

67. GE failed to provide for adequate redundancy in the event of a power loss due to unavailability of emergency diesel generators. Backup emergency equipment was not stored close to the FNPP, and no independent battery systems existed to provide power to instruments during emergencies. As a result, power trucks, generators and batteries were unavailable at the time of the Fukushima Nuclear Disaster, so that operators in the control room were forced to connect car batteries to the gauges in the control room in order to monitor the crisis.

68. In addition, GE's use of seawater pumps in the design for Units 1-3, meant that in the event of flooding, the pumps would not function properly to maintain the reactor cooling process essential for reactor safety. The tsunami flooding at the FNPP destroyed the seawater pumps.

69. GE also negligently designed pipes for the cooling system. The design for these pipes was so deficient that at the time of construction, engineers struggled to match piping to the blueprints for the plant. The only solution was to use heavy machinery to pull the pipes close enough together so that they could be welded shut. If the pipes burst, the reactor core cannot be cooled. This is exactly what happened during the Fukushima Nuclear Disaster.

70. This series of defects in the design and construction of the FNPP, among others, coupled with the already defective design inherent in the unsafe small containment structure for the Mark I, caused the Fukushima Nuclear Disaster to occur.

71. GE established an unreasonably dangerous design basis for the construction of the FNPP Mark I reactors. In failing to account for and protect against reasonably foreseeable events, e.g., earthquakes, flooding by tsunami, power loss and corresponding cooling system failures, GE knowingly, negligently or recklessly set in motion the series of events culminating in the March 2011 disaster.

GE Builds the FNPP in a Known Earthquake/Tsunami Region

72. Japan is the nation with the most recorded tsunamis in the world and the highest rate of occurrences, with 195 tsunamis over 1,313 years and an event occurring every 6.73 years.[1]

73. The Tohoku region of Japan, where the FNPP is located, is especially well known for earthquakes and devastating tsunamis. Tohoku's misfortune is noted in historical records beginning as far back as 869 A.D. when a tsunami reached 4 kilometers inland in nearly the exact same pattern as the March 11, 2011 tsunami.[2] Less than 75 years before GE built the FNPP, Tohoku suffered two of Japan's largest tsunamis ever – the 1896 Meiji-Sanriku earthquake and tsunami and the 1933 Sanriku tsunami, only 71 and 34 years, respectively, before the FNPP was designed by GE, putting GE on full notice of the danger.

74. The history of earthquake and tsunami disasters in Japan is well-recorded. The earthquake of 869 A.D. is in the recorded history of the time with an estimated magnitude of 8.6, which caused massive flooding along the eastern coast of Japan.

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1 *See* Wikipedia article: *List of Historical Tsunamis* available at http://en.wikipedia.org/wiki/List_of_historic_tsunamis#684_AD:_Hakuho.2C_Japan_.28.E7.99.BD.E9.B3.B3.E5.A4.A7.E5.9C.B0.E9.9C.87.29.

2 *See* Reiji Yoshida, *869 Tohoku Tsunami Parallels Stun,* The Japan Times, March 11, 2012.

75. On June 15, 1896, approximately 71 years before GE designed the FNPP, the Meiji-Sanriku Tsunami struck, triggered by an 8.5 magnitude earthquake 103 miles off the east coast of Tohoku.[3] The largest of the tsunami waves, 38.2 meters high, landed only 107 miles from where the FNPP is currently located.

76. Until the events of 2011, the 1896 Meiji-Sanriku tsunami was the most devastating tsunami in Japanese recorded history. It killed 26,975 people, left 5,390 people injured and destroyed 9,313 homes. It also laid to waste thousands of acres of arable lands, 10,000 fishing boats and 300 steam boats and schooners.[4]

77. Information about the 1896 Meiji-Sanriku tsunami, including its enormous size and pattern of intense destruction, was readily available to GE when it designed the FNPP in 1967. Within four months of the 1896 tsunami, National Geographic published a multiple-page article reporting that witnesses watched the tsunami reach 80-100 feet in height, 9-10 times higher than GE's design basis for the 1967 FNPP. Records were also maintained in Hawaii, where the 1896 Meiji-Sanriku tsunami caused 9-meter waves that destroyed wharfs and houses and The New York Times even reported that the 1896 tsunami killed 30,000 people.[5]

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[3] *See* George Pararas-Carayannis, *Tsunamigenic Source Mechanism and Efficiency of the March 11, 2011 Sanriku Earthquake in Japan*, Journal of Tsunami Society International, 2011 Vol. 30, N.2, p.22, available at http://tsunamisociety.org/302GPCc.pdf (stating the size of the Meiji-Sanriku Tsunami reached 38.2 meters); *see also* USGS, *Historic Earthquakes: Sanriku, Japan 1896 June 15 UTC*, available at: http://earthquake.usgs.gov/earthquakes/world/events/1896_06_15.php.

[4] Eliza Ruhamah Scidmore, *The Recent Earthquake Wave on the Coast of Japan,* National Geographic, 1896 available at: http://ngm.nationalgeographic.com/1896/09/japan-tsunami/scidmore-text.

[5] *See Another Earthquake in Japan*, The New York Times, Sept. 3, 1896.

78. On March 2, 1933, the Sanriku Tsunami (like the 1896 tsunami) hit the Tohoku region of Japan with wave heights of 28.7 meters only 34 years before GE designed the FNPP. These waves alone were eight times higher than GE's design basis for the FNPP and occurred only 114 miles away from the FNPP's future location. The 1933 tsunami killed 3,064 people and destroyed more than 7,000 homes, 4,885 of which were washed away.

79. Immediately south of Fukushima, in the Kanto region of Japan, six massive tsunamis hit the coast between 1854 and 1946, each with waves several times higher than the GE design basis for the FNPP.

80. Between 1854 and 1855 alone, the Japanese prefectures 125-175 miles south of Fukushima experienced three tsunamis (the Ansei tsunamis) in a single year that reached heights of up to 13.2 meters, four times GE's design basis for the FNPP.

81. On September 1, 1923, 44 years before GE designed the FNPP, the Great Kanto earthquake (measuring 8.3) and tsunami struck approximately 137 miles south of Fukushima. 6 The earthquake caused a 10-12 meter tsunami.

82. Only 23 years before GE designed the FNPP, the 1944 Tonokai tsunami on Japan's southern-pacific coast measured 10 meters. 1,223 people were killed by the earthquake and tsunami combined and 3,059 houses were destroyed by the tsunami alone. 7 The December 21, 1946, Nankai tsunami also landed in Japan's Kanto region, measuring 10-11 meters, and destroying 2,100 homes.

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[6] *See 1923 Great Kanto Earthquake*, available at http://en.wikipedia.org/wiki/Great_Kanto_Earthquake.

[7] http://en.wikipedia.org/wiki/1944_T%C5%8Dnankai_earthquake

83. Each of these well-documented tsunami and earthquake disasters, as well as others throughout history, occurred before the design and construction of the FNPP. GE knew that between 1854 and 1945, eight tsunamis larger than its FNPP design basis struck the area immediately north and south of the planned FNPP site.

84. In short, more than ample evidence existed for decades that an earthquake in the Fukushima area could cause a devastating tsunami.

85. Despite this known history of tsunami danger, GE designed the FNPP with a design basis accounting for only a maximum wave height of 10.5 feet, with the FNPP located on only a 13-foot cliff, which was utterly inadequate to withstand the tsunami that struck in March 2011.

86. The tsunami that crippled backup power supplies during the Fukushima Nuclear Disaster, leading to the meltdown of three reactors, was more than 45 feet high.

87. As a direct result of GE's unreasonable design basis, the GE-designed protective walls and breakwaters completely failed to stop the powerful flooding from inundating most of the FNPP and rendering it dangerously blacked out, destroying its essential water pumps, and incapacitating the remaining mechanisms needed for reactor cooling.

The "Meltdown"

88. Soon after the earthquake occurred, the nuclear reactors at the FNPP were automatically shut down. The control rods were inserted into the core and the nuclear chain reaction stopped. However, the reactors were still hot, and the cooling system was required to be operational to prevent the reactors from overheating. Due to design flaws, the cooling system failed to operate, with the result that reactors overheated and a meltdown occurred.

89. The FNPP was disconnected from the power grid soon after the earthquake because the electrical transmission towers failed. Therefore, the essential power supply for the reactor cooling systems was knocked out. The diesel backup generators that GE designed to keep cores cool in such a power loss turned on for only 45 minutes before they were disabled by the tsunami. This failure was due to GE's decision to place the backup generators in a vulnerable, unreasonably dangerous location in non-sealed, non-waterproof turbine rooms at the bottom of the plant, which was close to sea level. The critical emergency cooling pumps placed by the edge of the Pacific, were also destroyed, making cooling impossible even had the diesel backup generators survived.

90. The GE design basis for flood protection was negligently set by GE at just 3.1 meters, which was woefully short because several tsunami waves struck the FNPP and peaked at approximately 15 meters of height. These waves flooded, destroyed and disabled various parts of the FNPP reactor complex, and as many had predicted, the Mark 1 reactor core overheated.

91. Eventually, reactor Units 1 and 3 experienced hydrogen buildups and explosions, followed days later by explosions at Units 2 and 4, causing considerable damage to the reactor buildings. Units 1, 2 and 3 ultimately experienced a full meltdown and released massive amounts of radioactive material into the environment.

92. GE's defective design of the FNPP (in particular of the Mark I) is directly responsible for these explosions and the nuclear disaster that unfolded in Fukushima thereafter.

Herculean Efforts of FNPP Operators Could Not Prevent Eventual Reactor Meltdown.

93. Within about one hour after the earthquake there was a complete loss of power to the joint control room for Units 1 and 2. HPCI could no longer function, manually or

automatically, when the amount of reactor coolant dwindled. Without control room power, operators could no longer monitor or any Unit 1 systems.

94. An hour into the crisis, the isolation condenser system was the only system available to cool the Unit 1 reactor. However, both isolation condensers were closed and, due to the loss of power, operators had no way to open them.

95. Within approximately three hours after the earthquake, the water inside the reactor core of Unit 1 had dwindled, uncovering part of the core. Once the core is exposed, the reactor core is at risk of a meltdown.

96. By 3.5 hours after the earthquake, fuel inside the core of Unit 1 began to melt. The zirconium cladding on the fuel rods reacted with superheated steam to create hydrogen gas and more heat.

97. Approximately six hours after the nuclear disaster began, authorities in Fukushima Prefecture directed residents within 1.2 miles (2km) of the FNPP to evacuate. Half an hour later, the Prime Minister expanded the evacuation zone to 1.9 miles (3 km), with residents living within a 6.2 mile radius (10 km) directed to take shelter.

98. Operators later restored power to the controls and put one isolation condenser back in service. By this time, no cooling had been provided to the reactor for almost six hours and core damage had occurred. The valves of the restarted isolation condenser opened but the water level remained at 65 percent, indicating that the system did not function.

99. Just before midnight on March 11, 2011, operators first noticed increasing containment pressure. The superintendent opted to vent Unit 1. With no procedure for operating the vent valves without power, the operators devised a plan to operate the valves manually. They

did this knowing that venting would release radioactive matter, due to the defective GE design of the vents, which had no mechanism to filter radioactive materials when venting occurs.

100. At approximately 3:00 a.m. on March 12, 2011, a press conference was held to announce the venting of the containments. Venting was not immediately conducted, however, because evacuations were not yet completed and venting would release radioactive matter into the atmosphere.

101. At 4:50 a.m. on March 12, 2011, gases were escaping the Unit 1 containment structure as evidenced by radiation measured at the site. As the situation at Unit 1 worsened, the Prime Minister expanded the evacuation zone to 6.2 miles (10 km).

102. Approximately 15 hours after the earthquake, most of the core of Unit 1 was damaged and a significant amount of fuel had melted and dripped to the bottom of the reactor vessel. Seawater was injected in a desperate attempt to cool the Unit 1 reactor.

103. By the afternoon of March 12, 2011, a high concentration of hydrogen generated by the reaction of steam with the zirconium cladding of the fuel assemblies had leaked through the containment seals and collected at the floor of the reactor building. Eventually, the collected hydrogen ignited, creating a large explosion at Unit 1 which blew the outside panels off the reactor building and spewed radioactive matter into the environment.

104. By 4:25 p.m. on March 12, 2011, the Prime Minister expanded the evacuation zone to 12.4 miles (20 km).

105. Meanwhile, Unit 3 was developing problems. By mid-morning on March 12, the RCIC cooling system for Unit 3 shut down unexpectedly and could not be restarted. At this time, no water was being injected into the reactor. One hour after RCIC shut down, the HPCI

system detected low reactor water and automatically started. Unlike Unit 2, which had working RCIC but no HPCI, Unit 3 had the opposite.

106. At 8:27 p.m. on March 12, 2011, station batteries at Unit 3 failed and the quality of instrumentation began to degrade. Soon, reactor water level indication was lost. The last indicated reactor water level before the failure was only 16 inches (400 mm) above Top of Active Fuel.

107. At 2:42 a.m. on March 13, 2011, the HPCI of Unit 3 ceased working. Operators attempted to restart HPCI but were unsuccessful because the batteries were exhausted. Furthermore, the absence of DC power prevented operators from using the Safety Relief Valves. With no cooling systems available, operators attempted water injection by diesel-driven fire pump, but reactor pressure quickly increased well above the discharge pressure of the fire pump, preventing water injection.

108. At around 4:15 a.m. on March 13, 2011, water levels at the reactor core of Unit 3 started to retreat to below the core. As the core uncovered, core damage commenced, and the high-temperature interaction of steam and zirconium began, generating large amounts of hydrogen in the reactor. By 7:35 a.m., reactor water level at Unit 3 had lowered to the bottom of the fuel zone indication, suggesting that the core may have been completely uncovered.

109. At 11:01 a.m., on March 14, 2011, a large hydrogen explosion occurred in the Unit 3 reactor building blowing the panels off the reactor building and injuring 11 operators. The large amount of flying debris from the explosion damaged multiple portable generators and the temporary power supply cables. Debris on the ground near the unit was extremely radioactive. With the exception of the control room operators, all work stopped and operators evacuated to the Emergency Response Center.

110. On the morning of March 15, 2011, operators heard a loud noise in Unit 2, and suppression chamber pressure dropped. The loud noise in Unit 2 was widely reported as another explosion. With no reports of steam being discharged from the Unit 2 vent stack, operators suspected the loud noise, instrument failure and subsequent containment depressurization to be indicative of a breach of the Unit 2 containment.

111. At approximately the same time, a hydrogen explosion occurred in the Unit 4 reactor building. Following the explosion in the Unit 4 reactor building, radiation dose rates increased significantly. All nonessential personnel were evacuated to Fukushima Daini Nuclear Plant (approximately 4.3 miles, (7 km) away), one of the facilities included in the FNPP, leaving 70 people at the station. Control room operators could no longer remain in the control room continuously due to exposure to high radiation levels.

112. On March 14, 2011, Unit 2 lost RCIC coolant injection and remained without coolant injection for 6.5 hours. The core began to uncover at approximately 4:30 p.m. on March 14, resulting in overheating and an eventual meltdown of the fuel into the bottom head of the reactor vessel. Cooling was not reestablished until a fire truck was used to inject seawater.

Negligence and Defective Design of the Mark I and the FNPP Caused the Fukushima Nuclear Disaster

113. Defendants failed to design for "Defense in Depth." This approach requires that a power plant be designed to withstand severe catastrophes, even when several systems fail. Defendants failed to design a Defense in Depth system for the FNPP, resulting in multiple core meltdowns because cooling could not be restored to the FNPP after the loss of external electric power.

114. GE's negligence and defective design of the Mark I BWR containment structure resulted in the release of nuclear matter outside of the containment. Unable to maintain cooling of the reactor, as long suspected by experts and well known to GE, the nuclear core inside Units 1-3 melted through each of the "containments" as nuclear matter escaped.

115. In addition, GE's negligence in designing and constructing the FNPP in a manner that utterly failed to account for the significant and recent high-level tsunami history in the region caused the FNPP's defenses against flooding to be completely ineffective. As one expert report on the disaster has noted, a "nuclear power plant built on a slope by the sea must be designed so that it is not damaged as a tsunami runs up the slope." The tsunami that struck measured several times GE's design basis and was not remotely accounted for by GE's method. This flooding crippled power and necessary emergency cooling systems, particularly the negligently placed emergency generators located in basements without water-sealed doors for protection.

116. Further contributing to the nuclear release was GE's negligence and defective design of its emergency service water (or seawater) pumps necessary for post-accident cooling that were destroyed by the flooding. Because these pumps were essential to heat extraction in the reactors, their destruction left no means available to dissipate heat from the reactors, thus contributing mightily to the reactor meltdowns.

117. GE also failed to safely design and construct the necessary series of emergency power backups to support necessary emergency cooling system redundancies (themselves defectively designed) that are essential to maintain the safety of nuclear plants in times of emergency.

118. GE's unreasonably unsafe design and construction of the FNPP and its Mark I reactors was the direct cause of the nuclear disaster that took place on March 11, 2011 and the days that followed.

Evacuation and Relocation of 150,000 People

119. A nuclear emergency was declared by then-Prime Minister of Japan, Naoto Kan, on March 11, 2011. Evacuation of all persons within 20 km (12 miles) of the FNPP was ultimately ordered. Eventually, roughly 150,000 citizens were evacuated from their homes as a result of the Fukushima Nuclear Disaster.

120. The dangers associated with the release of radioactive matter are unlike any other poison or contaminant affecting the human body. They are highly disruptive to molecules within the human body. As radioactive isotopes escape containment, they penetrate the human body and release enough energy to "ionize" chromosomal molecules, disassembling DNA. This often leads to chronic radiation sickness, and explains why radiation exposure can result in cancer and genetic mutations.

121. Persons in the areas surrounding a containment breach must commonly evacuate for long periods of time (sometimes for several decades or more) because escaped radioactive isotopes decaying slowly can remain in the environment and foods at unsafe levels for long periods of time. Since they cannot be deconstructed by the normal plant or animal metabolic processes, much of it makes its way up the food chain until consumed by humans, eventually causing the symptoms of long-term exposure to radiation.

122. Tens of thousands of residents of the area surrounding the FNPP were placed in temporary housing and persons in the 20-30km zone were made to suffer for several days under "shelter-in-place" instructions before eventual evacuation opportunities. The evacuation zone

itself expanded to 30 km and beyond, with unsafe levels of radiation identified in areas distant from the FNPP.

The Resulting Devastation

123. The impact of the Fukushima Nuclear Disaster on local property owners and businesses was devastating. Much of the region around the FNPP, was covered in dangerous radiation, and remains uninhabitable to this day. Even businesses and property located outside of the evacuation zone sustained damages due to radiation, including radioactive ash that settled on their property, thereby making the property wholly unusable and at minimum requiring significant remediation costs.

124. Scores of people lost their homes, their jobs, their land, their children's schools and all the remaining resources of their respective communities after evacuating to escape the spread of deadly radioactive matter from the FNPP. Many evacuated individuals still have not been able to return to their homes.

125. Once radioactive substances are released, they continue to affect the environment. Radioactive fallout that spread over a broad area remains in mountain and forest areas for many years, and the level of radiation does not naturally diminish for many decades. Wildfires, floods and rainfall can spread contamination further.

126. In response to the meltdown and release of radioactive materials the Japanese government established an evacuation zone. The damage caused by the contamination is astonishing. For example, fishermen living in the area who regularly made a living in nearby waters have seen their incomes vanish. To this day, Japan still prohibits the fishing of many species of fish caught in the Fukushima area because radioactive discharge continues to flow into the Pacific Ocean, contaminating local fish.

127. Prior to the Fukushima nuclear disaster, the Fukushima area was well known as a tourist destination and agricultural area. Its products included decorative roses, rice, apples, fish and dairy products, and highly-sought after koi fish, among other things. The sudden evacuation also forced livestock owners to abandon their animals at great financial cost. These industries were all destroyed by the Fukushima Nuclear Disaster.

128. Numerous golf courses became unusable because the radioactive fallout settled on the clubhouse, trees, bushes, grass, cart paths, etc. Remediation included removing all top soil from the golf courses and replacing it with new turf, at enormous expense. Hotels and other tourist destinations are unable to attract customers due to fears of radiation poisoning, and many of those located in the evacuation zone have been forced to shut down.

129. Also affected were conventional businesses, including manufacturing companies whose plants are now vacant because the exterior of the plant, the parking lot, the walkways, the loading dock and all exterior landscape are now covered in radioactive waste. Entire commercial communities were destroyed or greatly diminished not only due to the destruction of property due to radioactive contamination, but also due to the loss of customers as residents fled the area. There are privately owned hospitals, medical and dental clinics, restaurants and educational facilities that also closed for the reasons cited above. According to the news media in Japan, more than 1,700 companies were closed due to the fallout and many were forced to file for bankruptcy.

130. Municipalities faced similar destruction. Parts of many municipalities are shut down due to massive radioactive fallout, which can include (depending on the municipality) government buildings, sidewalks, roads, sewer systems, schools, hospitals, etc. Entire communities were forced to relocate away from the evacuation zone. Assigned to live in flimsy

pre-fabricated temporary housing, they attempted to maintain their local governing bodies in absentia, holding elections for mayors and other elected officials, all of whom served without being able to visit or work from their town halls. The tax basis for these communities is now virtually non-existent, meaning that they have no revenue base from which to hope to rebuild or remediate the damage to their public buildings.

131. The transportation systems also failed as the railroad to Fukushima was closed. Although much of the Tohoku region affected by the March 2011 earthquake and tsunami have been able to repair infrastructure, much of the infrastructure in and around the evacuation zone has not been repaired, nor has debris been moved, making reconstruction and restoration of business all but impossible.

132. Even TEPCO, the operator of the FNPP, suffered financial distress and for a brief time was considered to be insolvent.

133. In short, much of the previously vibrant area around the FNPP can only be described as "ghost towns." The doors to homes are left open and curtains flutter in the wind. At the railroad platform, no passengers await trains. At the service station, the vending machine promotes cold drinks but offers none. Traffic lights change from red to green and back to red, with no traffic to monitor. Wild animals such as wild boars, rats and other animals roam the streets. There are no people. Roads are guarded by men in hazmat suits. And no one will ever live there again.

II.

CLASS ALLEGATIONS

134. Plaintiffs bring this class action pursuant to Fed. R. Civ. P. 23 and on behalf of themselves and all others similarly situated who have suffered property and other economic

injury and damages as a result of the disaster that began March 11, 2011, and that culminated in massive releases of radioactive matter when GE–designed nuclear reactors experienced meltdowns and the containment structures failed to contain nuclear matter from the outside environment.

135. Plaintiffs bring this action specifically on behalf of themselves and the following classes:

(1) *Citizen Class*: Homeowners in and around the evacuation zone (as defined by the Japanese government) who suffered articulable and discrete economic injury as a result of the Fukushima Nuclear Disaster that began on March 11, 2011.

(2) *Business Class*: All businesses, including sole proprietorships and all variants of corporate entities, whether not-for-profit or for-profit in and around the evacuation zone (as defined by the Japanese government) who suffered articulable and discrete economic injury as a result of the Fukushima Nuclear Disaster that began on March 11, 2011, including family-run businesses and non-natural entities, as well as other business forms operating in and around the evacuation zone.

136. These Classes include over 150,000 citizens, and hundreds of businesses in and around the evacuation zone, located within Prefectures surrounding the FNPP, though the exact number and the identities of the Class members are currently unknown.

137. With respect to each of the Classes, the members are so numerous that joinder of all Class members is impracticable.

138. Common questions of law and fact predominate and exist as to all members of the Classes. Nearly all factual, legal, and statutory relief issues raised in this Complaint are common to each of the members of the Classes and will apply uniformly to every member of the Classes. Among the questions of law and fact common to each of the Class members are:

a. Whether GE acted with negligence in the design, manufacture, sale, construction and maintenance of the Mark I nuclear reactors located at the FNPP Plant;

b. Whether GE defectively designed its Mark I nuclear reactors and thereby created an unreasonably dangerous product, the benefits of which were far outweighed by the life-threatening dangers associated with and inherent in the design;

c. Whether GE misrepresented, through material misstatements and omissions, the safety of its Mark I nuclear reactors as designed, manufactured, constructed and maintained by GE;

d. Whether GE owed a duty of care to the Plaintiff Classes when it designed, manufactured, sold, constructed and maintained the Mark I nuclear reactors installed at the FNPP;

e. Whether the defective design of the Mark I nuclear reactor containment structure was unreasonably dangerous and ultimately responsible, given its inherently and unreasonably unsafe design, for the release of nuclear matter in the hours and days following the March 11, 2011 earthquake;

f. Whether GE defectively and with negligence designed the FNPP;

g. Whether GE owed a duty to the Plaintiffs to remediate defective designs; and;

h. Whether GE owed a duty to Plaintiffs to warn of the dangers associated with its defective designs.

139. Plaintiffs' claims are typical of the claims of other members of the Class because Plaintiffs and every other member of the Class have suffered similar injuries as a result of GE's defectively designed, constructed and maintained Mark I nuclear reactors and its defective design, construction and maintenance of the FNPP which permitted the release of dangerous radioactive matter into the surrounding area, and ultimately the world, in March 2011. Plaintiffs have no interest adverse to the interests of the other members of the Classes.

140. Plaintiffs will fairly and adequately represent and protect the interests of their respective Classes. Plaintiffs have retained able counsel with extensive experience in complex class action litigation. The interests of Plaintiffs are coincident with, and not antagonistic to, the interests of the other Class members.

141. The questions of law and fact common to the members of the three Classes predominate over any questions affecting only individual members, including legal and factual issues relating to liability and damages.

142. Plaintiffs and other members of the respective Classes have suffered damages as a result of GE's wrongful and actionable conduct. Absent a class action mechanism, Plaintiffs will not be able to effectively or meaningfully litigate their claims and will continue to suffer damages, nor will they be made whole for the economic damage they have incurred as a result of the GE's conduct.

143. A class action is superior to other methods of litigation for the fair and efficient adjudication of this controversy in no small measure because mere joinder of all class members is impracticable. Moreover, given that damages to each class member render the expense and burden of individual litigation less viable, Plaintiffs and similarly positioned class members will not likely have a genuine remedy for the damages caused them. These classes are readily

identifiable - in the case of homeowners and businesses, for example, the government of Japan and TEPCO have maintained careful records of the injured parties and their damages. This case will not present management difficulties as a class action.

COUNT I

(NEGLIGENCE)
(AS AGAINST ALL DEFENDANTS)

144. The allegations set forth above in Paragraphs 1 through 143, inclusive, are incorporated by reference as though fully set forth herein.

145. As detailed above, the cost of building nuclear reactors was of such concern to Defendant GE that it developed design plans for a cheap reactor, small and with a significantly smaller, but less safe, containment than industry standard. The reactor that it developed was the Mark I BWR reactor that was ultimately built, and failed, at the FNPP.

146. Defendants, and each of them, as well as their subsidiaries, agents, servants, agents and/or employees, owed the Plaintiffs a duty to reasonably and safely design, manufacture, sell, construct, and maintain each of the Mark I nuclear reactors located at the FNPP.

147. GE and its subsidiaries, agents, servants and/or employees breached their respective duties owed to the Plaintiff class by negligently and recklessly failing to incorporate into the design of the Mark I nuclear reactors at the FNPP adequate safeguards to ensure that the reactors could withstand the forces of tsunamis and earthquakes.

148. Given the long history of massive earthquakes and tsunamis in the region, Defendant GE should have anticipated the possibility that there would be similar occurrences during the lifetime of the FNPP. Armed with that knowledge, GE should have designed the FNPP so that it could withstand the forces of known hazards in the region.

149. Defendant GE and its subsidiaries, agents, servants and/or employees further breached their respective duties owed to the Plaintiff class by negligently failing to implement during the life of the FNPP any measures designed to remediate or mitigate the hazards inherent in the negligently designed Mark I reactors at the FNPP.

150. GE and its subsidiaries, agents, servants and/or employees, and each of them, further breached their respective duties owed to the Plaintiff class by negligently placing emergency backup diesel generators (which protect the nuclear plant during power outages) in low basement locations of buildings near the Pacific Ocean. Because those buildings were not designed to be water resistant, they were easily flooded. As a result, GE created an unacceptable risk of harm by failing to design a system that made backup power available to keep the reactors cool in order to prevent a meltdown and possible explosion when outside power was lost. Despite such risk, Defendants failed to remediate that error during the life of the FNPP.

151. GE and its subsidiaries, agents, servants and/or employees further breached their respective duties by failing to adequately warn its customers, including the members of the Plaintiff class, of the risks associated with operating the GE reactors in relation to tsunami and earthquake protection issues (given the long history of massive earthquakes and tsunamis in the region).

152. GE and its subsidiaries, agents, servants and/or employees further breached their respective duties owed to the Plaintiff class by negligently, carelessly and improperly placing seawater pumps (which are necessary to maintain reactor cooling during emergencies to prevent explosions) in areas which made them susceptible to flooding and possible operational failures. Defendants further beached their respective duties in that regard by failing to remediate or mitigate that error during the life of the FNPP.

153. GE and its subsidiaries, agents, servants and/or employees defectively designed cooling mechanisms (redundancies necessary to ensure reactor cooling during an emergency to prevent explosions) and failed to remediate that error during the life of the FNPP.

154. As a natural and probable consequence of Defendants' negligent conduct as described herein, the members of the Plaintiff class, and each of them, suffered damages in the nature of, among others, destruction of property and lost business revenues and income. Such damages were the foreseeable consequence of Defendants' conduct.

155. Defendants' negligent conduct with respect to the design and maintenance of the FNPP was the proximate cause of the damages suffered by the Plaintiff class and a substantial factor in bringing about the losses described herein.

156. As a direct and proximate result of Defendants' conduct as described herein, the Plaintiff class has suffered damages in excess the jurisdictional limits of this Court.

COUNT II

(STRICT PRODUCTS LIABILITY – MANUFACTURING DEFECT (AS AGAINST ALL DEFENDANTS)

157. The allegations set forth above in Paragraphs 1 through 156, inclusive, are incorporated by reference as though fully set forth herein.

158. GE and its subsidiaries, agents, servants and/or employees manufactured, constructed, distributed, and/or sold the subject Mark I BWR reactors which were unreasonably dangerous products for the FNPP site.

159. Each of the subject BWR reactors contained manufacturing defects when each of the subject reactors left the Defendants' possession.

160. As manufacturers, designers, distributors, suppliers, sellers and marketers of the Mark I reactors, GE and its subsidiaries, agents, servants and/or employees is liable for manufacturing, distributing, selling and marketing the subject reactors with the actual and constructive knowledge that the product posed a high degree of risk to the safety and well-being of all persons, property and businesses located within the vicinity of the FNPP, including each member of the Plaintiff class.

161. GE had actual and constructive knowledge of the fact that a radiation leak in the Mark I reactor would spread and cause injury to all persons, property and businesses within the vicinity of the FNPP, including each member of the Plaintiff class.

162. The conduct of GE and its subsidiaries, agents, servants and/or employees was unreasonable under the circumstances. As set forth above, the information available to Defendants creates a reasonable inference that the manufacturing defects created foreseeable dangers to all persons, property and businesses located within the vicinity of the FNPP, including each member of the Plaintiff class.

163. The manufacturing defects as described herein were substantial factors in causing the injuries, damages, and harm to the members of the Plaintiff class. The manufacturing defects in the BWRs proximately caused reasonably foreseeable damages to the individual members of the Plaintiff class.

164. At all times herein mentioned, GE and its subsidiaries, agents, servants and/or employees acted with malice, fraud, and oppression, and engaged in despicable conduct that should not be tolerated in a civilized society, displaying a conscious, willful, and intentional disregard for the health, safety, and welfare of the public, the environment and the individual members of the Plaintiff class. Plaintiffs seek class relief in this regard.

COUNT III

(STRICT PRODUCTS LIABILITY – DESIGN DEFECT)
(AS AGAINST ALL DEFENDANTS)

165. The allegations set forth above in Paragraphs 1 through 164, inclusive, are incorporated by reference as though fully set forth herein.

166. At all relevant times herein, Defendant GE and its subsidiaries, agents, servants and/or employees were the designers, manufacturers, distributors, sellers, and creators of the Mark I reactors that were constructed at the FNPP site.

167. GE and its subsidiaries, agents, servants and/or employees had a duty of due care to design and manufacture the BWRs in a reasonably safe manner.

168. GE and its subsidiaries, agents, servants and/or employees' duty of care included testing the BWRs to determine the risks posed to all persons, property and businesses located in the vicinity of the FNPP, including the individual members of the Plaintiff class, the environment, water, and the air in the surrounding vicinity. The BWRs did not perform as safely as an ordinary consumer would have expected them to perform when used or misused in an intended or reasonably foreseeable way.

169. GE and its subsidiaries, agents, servants and/or employees had a duty not to put on the market an unsafe and defectively designed product that posed a serious danger to all persons, property and business interests in the vicinity of the FNPP, including the individual members of the Plaintiff class.

170. GE and its subsidiaries, agents, servants and/or employees breached each of those duties by, among others, the following:

(a) defectively designing circulation pipes critical to the reactor's cooling system and failing to remediate that defect during the life of the FNPP.

As a direct and proximate result of such defective condition, the FNPP suffered a catastrophic "Loss of Coolant Accident" during the Fukushima Nuclear Disaster, due to the breaking, splitting apart, and cracking of such pipes.

(b) defectively designing the reactor buildings such that they were incapable of accommodating sufficient emergency equipment and failing to remediate that defect during the life of the FNPP. As a direct and proximate result of such defective conditions, critical backup equipment, such as power trucks, generators and batteries, were unavailable at the time of the Fukushima Nuclear Disaster.

(c) defectively designing the reactor control room by failing to install backup batteries to provide power during emergencies and by failing to remediate that defect during the life of the FNPP.

(d) defectively designing the FNPP by failing to design an emergency cooling system that would allow fresh water to be pumped directly into the reactors and by failing to remediate that defect during the life of the FNPP.

(e) defectively designing the Mark I BWR reactor in such a manner so that the control rods entered the reactor vessel through holes in the floor, thus facilitating a meltdown through the bottom of the reactor vessel, which is what happened during the Fukushima Nuclear Disaster, and by failing to remediate that defect during the life of the FNPP.

(f) defectively designing the FNPP by placing spent fuel pools at the top of the reactor buildings, more than 100 feet in the air, making them susceptible to losing coolant water in the event of an earthquake and potentially exposing the spent fuel, risking an explosion, and by failing to remediate that defect during the life of the FNPP.

(g) defectively designing the FNPP by designing steam release valves that failed to open during the Fukushima Nuclear Disaster, thus contributing to the explosions and release of nuclear materials, and by failing to remediate that error during the life of the FNPP.

(h) Failing to design the FNPP for "Defense in Depth." This approach requires that a power plant be designed to withstand severe catastrophes, even when several systems fail. Defendants failed to design a Defense in Depth system for the FNPP, resulting in multiple core meltdowns because cooling could not be restored to the FNPP after the loss of external electric power.

171. Due to design and manufacturing defects, the FNPPP was not reasonably safe and protective of the environment, the public health and those with property or business interests, including individual members of the Plaintiff class, located in the vicinity of the FNPP.

172. The defective design of the BWRs and/or the FNPP, as alleged herein, actually and proximately caused reasonably foreseeable damages to the individual members of the Plaintiff class. The failure of the BWRs to perform safely was a substantial factor in causing harm to the Plaintiff class.

173. The conduct of GE and its subsidiaries, agents, servants and/or employees in designing, manufacturing, constructing, and/or maintaining the BWRs, a defective or unreasonably dangerous product, makes GE and its subsidiaries, agents, servants and/or employees strictly liable to the Plaintiff class. Plaintiffs seek class relief in this regard.

COUNT IV

(STRICT LIABILITY – ULTRAHAZARDOUS ACTIVITIES)
(AS AGAINST ALL DEFENDANTS)

174. The allegations set forth above in Paragraphs 1 through 173, inclusive, are incorporated by reference as though fully set forth herein.

175. GE and its subsidiaries, agents, servants and/or employees, and each of them, engaged in an ultrahazardous activity that caused harm, damages, losses, injuries, and economic and non-economic damages.

176. GE and its subsidiaries, agents, servants and/or employees, and each of them, are responsible for that harm, injury, and damages, both economic and non-economic, because they engaged in producing nuclear power at the FNPP which, by its very nature, is an ultrahazardous activity.

177. The injuries, damages, losses and harm suffered by members of the Plaintiff class are the kinds of harm that would reasonably be anticipated to occur as a result of the risk created by exposure to a radiation release of the nature and kind that occurred in connection with the Fukushima Nuclear Disaster.

178. The acts of GE and its subsidiaries, agents, servants and/or employees, and each of them, proximately caused harm to the Plaintiff class including personal injury, property damage, loss of enjoyment of property, diminished property values, and other economic losses including loss of earnings and stigma damages. The Plaintiff class will continue to incur losses and damage in the future.

179. GE and its subsidiaries, agents, servants and/or employees, and each of them, intended to cause or acted with conscious disregard of the probability of causing injury to the Plaintiff class, and are therefore liable for punitive damages. Plaintiffs seek class relief in this regard.

COUNT V

(DAMAGE TO REAL PROPERTY)
(AS AGAINST ALL DEFENDANTS)

180. The allegations set forth above in Paragraphs 1 through 179, inclusive, are incorporated by reference as though fully set forth herein.

181. Members of the Plaintiff class are the owners of certain businesses and real property interests located in the vicinity of the FNPP.

182. As a direct and proximate result of the conduct of GE and its subsidiaries, agents, servants and/or employees, the members of the Plaintiff class suffered irreparable harm to their businesses and real property interests. Such damage was caused by the negligence of GE and its

subsidiaries, agents, servants and/or employees in the design and maintenance of the FNPP prior to the Fukushima Nuclear Disaster.

183. The release of radioactive material was so extensive that it occasioned mass evacuations and relocations from the affected area and rendered the business and real property interests of the Plaintiff class worthless. Plaintiffs also seek class relief in this regard.

COUNT VI

(VIOLATION OF ARTICLES 709, 710 AND 715 OF THE CIVIL CODE OF JAPAN – GENERAL NEGLIGENCE, ESPECIALLY VIOLATION OF THE DUTY TO REMEDIATE)
(AS AGAINST ALL DEFENDANTS)

184. The allegations set forth in Paragraphs 1 through 183 are incorporated herein by reference.

185. Article 709 of the Civil Code of Japan provides that:

> A person who has intentionally or negligently infringed any right of others, or legally protected interest of others, shall be liable to compensate any damages resulting in consequence.

186. Article 710 of the Civil Code of Japan provides that:

> Persons liable for damages under the provisions of the preceding Article must also compensate for damages other than those to property, regardless of whether the body, liberty or reputation of others have been infringed, or property rights of others have been infringed.

187. Article 715 of the Civil Code of Japan provides that:

> (1) A person who employs others for a certain business shall be liable for damages inflicted on a third party by his/her employees with respect to the execution of that business; provided, however, that this shall not apply if the employer exercised reasonable care in appointing the employee or in supervising the business, or if the damages could not have been avoided even if he/she had exercised reasonable care.

> (2) A person who supervises the business on behalf of the employer shall also assume the liability under the preceding paragraph.
> (3) The provisions of the preceding two paragraphs shall not preclude the employer or supervisor from exercising their right to obtain reimbursement against the employee.

188. By way of the afore-mentioned conduct detailed herein, Defendants infringed the rights of Plaintiffs who are Japanese and other citizens, property owners, and businesses who were in proximity to the FNPP.

189. GE's aforementioned conduct led to the damages sought herein.

190. The specific measure of damages shall be proven at time of trial.

191. Plaintiffs also seek the recovery of attorneys' fees and costs because the laws of Japan permit a claim for the recovery of attorneys' fees and costs to prevailing parties in tort cases.

COUNT VII

(VIOLATION OF ARTICLES 709, 710 and 715 OF THE CIVIL CODE OF JAPAN – FAILURE TO WARN) (AS AGAINST ALL DEFENDANTS)

192. The allegations set forth in Paragraphs 1 through 191 are incorporated herein by reference.

193. Article 709 of the Civil Code of Japan provides that:

> A person who has intentionally or negligently infringed any right of others, or legally protected interest of others, shall be liable to compensate any damages resulting in consequence.

194. Article 710 of the Civil Code of Japan provides that:

> Persons liable for damages under the provisions of the preceding Article must also compensate for damages other than those to property, regardless of whether the body, liberty or reputation of others have been infringed, or property rights of others have been infringed.

195. Article 715 of the Civil Code of Japan provides that:

> (1) A person who employs others for a certain business shall be liable for damages inflicted on a third party by his/her employees with respect to the execution of that business; provided, however, that this shall not apply if the employer exercised reasonable care in appointing the employee or in supervising the business, or if the damages could not have been avoided even if he/she had exercised reasonable care.
> (2) A person who supervises the business on behalf of the employer shall also assume the liability under the preceding paragraph.
> (3) The provisions of the preceding two paragraphs shall not preclude the employer or supervisor from exercising their right to obtain reimbursement against the employee.

196. By way of the afore-mentioned conduct detailed herein, GE infringed the rights of Plaintiffs who are Japanese and other citizens, property owners, and businesses who were in proximity to the FNPP.

197. GE's aforementioned conduct led to the damages sought herein.

198. The specific measure of damages shall be proven at time of trial.

199. Plaintiffs also seek the recovery of attorneys' fees and costs because the laws of Japan permit a claim for the recovery of attorneys' fees and costs to prevailing parties in tort cases.

COUNT VIII

(VIOLATION OF ARTICLES 709, 710 AND 715 OF THE CIVIL CODE OF JAPAN – DIMINUTION OF VALUE TO REAL PROPERTY AND BUSINESS INTERESTS) (AS AGAINST ALL DEFENDANTS)

200. The allegations set forth in Paragraphs 1 through 199 are incorporated herein by reference.

201. Article 709 of the Civil Code of Japan provides that:

> A person who has intentionally or negligently infringed any right of others, or legally protected interest of others, shall be liable to compensate any damages resulting in consequence.

202. Article 710 of the Civil Code of Japan provides that:

> Persons liable for damages under the provisions of the preceding Article must also compensate for damages other than those to property, regardless of whether the body, liberty or reputation of others have been infringed, or property rights of others have been infringed.

203. Article 715 of the Civil Code of Japan provides that:

> (1) A person who employs others for a certain business shall be liable for damages inflicted on a third party by his/her employees with respect to the execution of that business; provided, however, that this shall not apply if the employer exercised reasonable care in appointing the employee or in supervising the business, or if the damages could not have been avoided even if he/she had exercised reasonable care.
> (2) A person who supervises the business on behalf of the employer shall also assume the liability under the preceding paragraph.
> (3) The provisions of the preceding two paragraphs shall not preclude the employer or supervisor from exercising their right to obtain reimbursement against the employee.

204. By way of the afore-mentioned conduct detailed herein, GE infringed the rights of Plaintiffs who are Japanese and other citizens, property owners, and businesses who were in proximity to the FNPP and caused unprecedented diminution of value to Plaintiffs' real property and business in that area.

205. GE's aforementioned conduct led to the damages sought herein.

206. The specific measure of damages shall be proven at time of trial.

207. Plaintiffs also seek the recovery of attorneys' fees and costs because the laws of Japan permit for the recovery of attorneys' fees and costs to prevailing parties in tort cases.

JURY DEMAND

Plaintiffs hereby demand a jury trial on all issues so triable.

PRAYER FOR RELIEF

WHEREFORE, Plaintiffs, individually and on behalf of all others similarly situated, pray for judgment against Defendants as follows:

A. For an order certifying this case as a class action and appointing Plaintiffs and their counsel to represent the Class;

B. For an order awarding, as appropriate, damages to Plaintiffs and the Class, including all monetary relief to which Plaintiffs and the Class are entitled pursuant to applicable law.

C. For an award of punitive damages.

D. For an order awarding attorneys' fees and costs as permitted by law;

E. For an order awarding pre-and post-judgment interest; and

F. For an order providing such further relief as this Court deems proper.

Dated: November 17, 2017

Respectfully Submitted,

By: _____

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